Flow Chart of Image-dependent Semi-Sigmoidal Tone Curve Processing for Color Images

Color Image → Convert Data → Sample Data → Normal Histogram → Composing Histogram → New Image Histogram → Semi-S Curve Tone Process → Look Up Table → New Color Image

RGB,YC$_R$C$_B$,LCH

RGB,Y, L

Setting High Occurrence Color Weighting

1 to N Large Area Histogram → Weighting W$_1$ to W$_n$

Semi-S Curve Setting : Transition Point (TP), Contrast Enhancement Parameters

generating a semi-S curve

Fig. 1

Liner

S Curve
for Printer

S Curve

Original Code Value

After
Processing
Code Value

Fig. 2 S-curve tone process

Fig. 3

Fig. 4

Fig. 5

Original

Fig. 7A

1/2 (TP=2)

Fig. 7B

1/3 (TP=3)

Fig. 7C

Images Before and After process
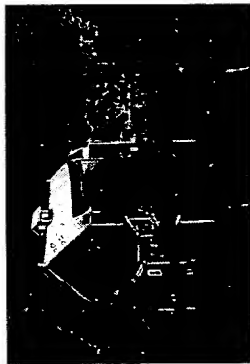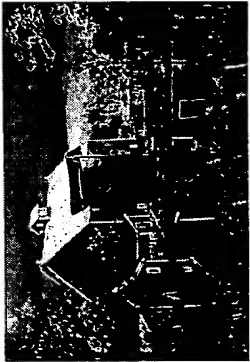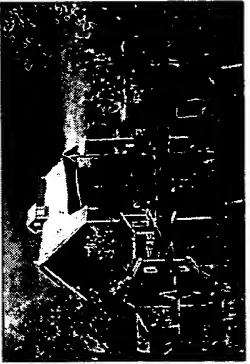
Original

Fig. 8A

1/2 (TP=2)

Fig. 8B

1/3 (TP=3)

Fig. 8C

Images Before and After process
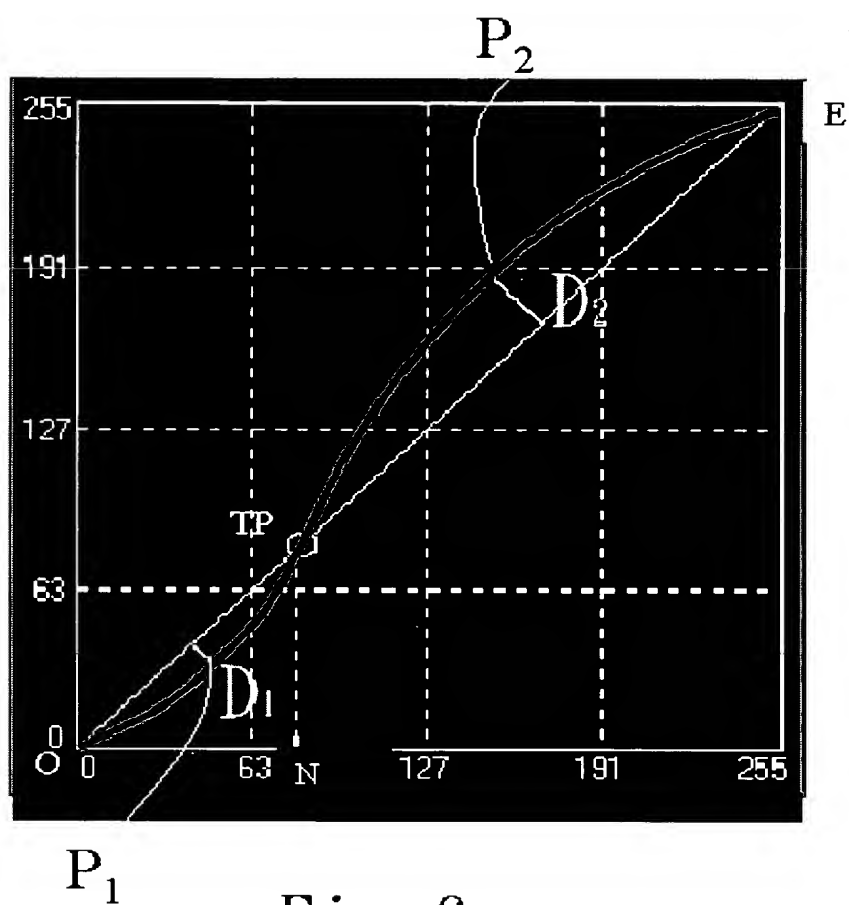
Fig. 6
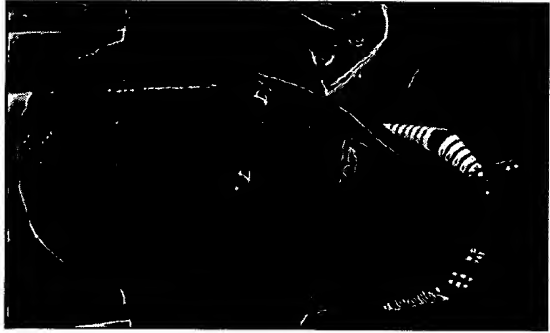
Original image
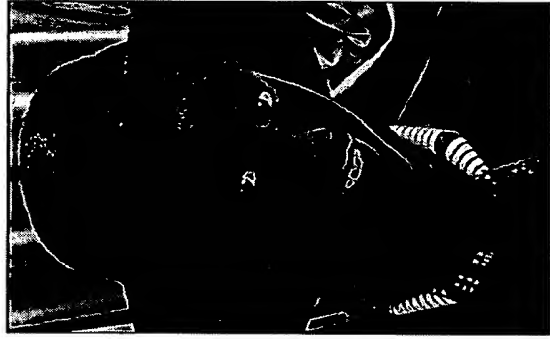
Fig. 9A

1/2 (TP=2)

Fig. 9B

1/3 (TP=3)

Fig. 9C

Images Before and After TP process

Fig. 10A

Fig. 10B

Fig. 10C

Weighting
Value

1.0

0

Function F(wf)

Linear

Non
Linear

LR$_{th}$

Max

Area
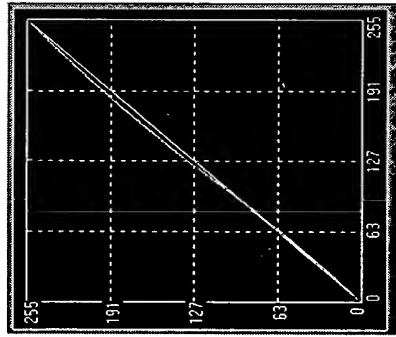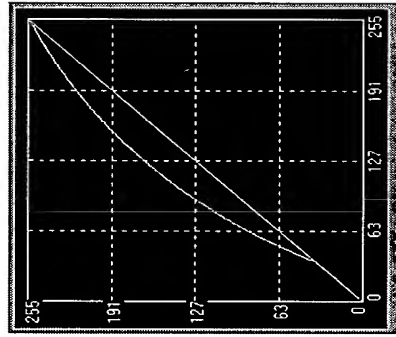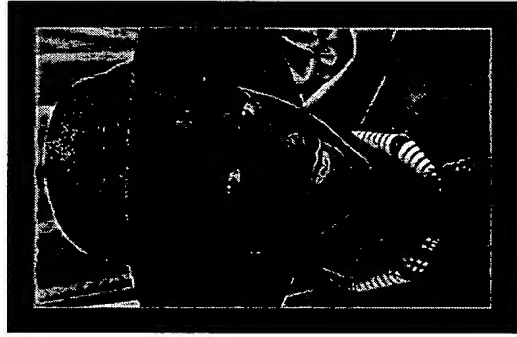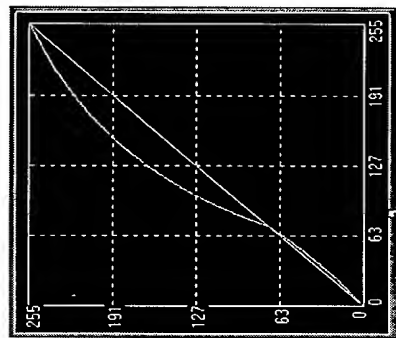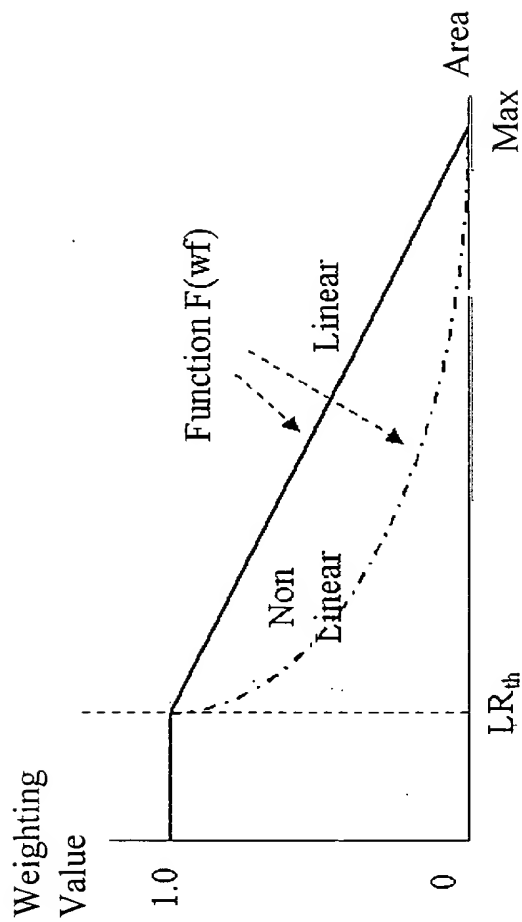
Linear F(wf):
$F(wf) = 1$, if $LR < LR_{th}$
$F(wf) = (1-LR_{th})/LR$, if $LR \geq LR_{th}$

Fig. 11